Weed Control on the Central Plains

There's an axiom in the weed control business: The more closely related weeds are to the crops they infest, the harder it is to stop them. That's because growing conditions that favor the crops often also favor the weeds. And chemicals that kill the weeds often as not also kill the crops.

Agricultural Research Service agronomist Randy L. Anderson has come up with some new ways to control problem weeds in winter wheat and other crops grown on the Central Great Plains. A few of these weeds—volunteer rye (rye that escaped harvest and sprouted the next season), jointed goatgrass, and downy brome—have been reduced by up to 75 percent in his studies near Akron, Colorado.

Anderson found that timing of nitrogen fertilizer placement can help growing wheat more than it helps downy brome. Usually, farmers apply fertilizer at seeding time, a practice that benefits both wheat and weeds. But if fertilizer is applied about 5 months before planting, wheat can get ahead of the downy brome. That's because wheat roots extend deeper into soil than those of downy brome and can extract fertilizer that's moved a couple of inches down. Then, because the wheat is taller, downy brome grows in its shade and loses more of its ability to compete.

Two other practices make it more difficult for downy brome. Switching to a taller wheat like Lamar, rather than growing the more traditional shorter varieties like Tam 107 and Vona, also cuts sunlight to the weeds," says Anderson, who is at ARS' Central Great Plains Research Station. And seeding 65 pounds of wheat seed per acre rather than the current 40 pounds results in more shading, too.

These easy-to-use farm practices reduced growth of downy brome by 40 percent and, likewise, its weed seed production. Following the technique for two growing seasons cut this weed population by 75 percent. In other tests using these same practices, Anderson reduced jointed goatgrass and rye populations by 35 percent.

Anderson says farmers will experience some yield reductions, because taller wheat varieties don't produce as much grain as shorter ones. But, he adds, if growers get their weed problems behind them, they can switch back to shorter varieties and then come out ahead.

Additional research shows that crop rotations also play an important role in reducing annual weed problems. Adding a summer annual crop like corn or sunflowers to the traditional winter wheat/fallow scheme lengthens the time before the next wheat crop. This allows farmers a chance to apply herbicides that kill weeds but do not affect the summer annual crop.—By **Dennis Senft,** ARS.

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